



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/768,568	01/29/2004	Jerome M. Eldridge	MI22-2496	6339

21567 7590 09/09/2004

WELLS ST. JOHN P.S.  
601 W. FIRST AVENUE, SUITE 1300  
SPOKANE, WA 99201

EXAMINER

DUONG, KHANH B

ART UNIT PAPER NUMBER

2822

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/768,568	<b>Applicant(s)</b> ELDRIDGE, JEROME M.	
	<b>Examiner</b> Khanh Duong	<b>Art Unit</b> 2822	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 56-81 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 81 is/are allowed.
- 6) ☒ Claim(s) 56-80 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/29/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2822

## **DETAILED ACTION**

### ***Response to Amendment***

This Office Action is in response to the Preliminary Amendment filed on January 29, 2004.

Accordingly, claims 1-55 were cancelled, and new claims 56-81 were added.

Currently, claims 56-81 are pending.

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on January 29, 2004 is being considered by the examiner.

### ***Claim Objections***

Claim 61 is objected to because of the following informalities: line 2, "the oxidized material" should be --the oxidized first portion-- for constancy.

Claim 76 is objected to because of the following informalities: line 4, since the "the material" has been oxidized, such term should be --the oxidized material--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 67 and 73-75 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 67, line 3, "the perovskite-type material" lacks antecedent basis and should be --the material--.

Re claim 73, line 1, "the outer portion" lacks antecedent basis and should be --the material--.

Re claim 74, line 1, "the outer portion" lacks antecedent basis and should be --the material--.

Re claim 75, line 3, "the perovskite-type material" lacks antecedent basis and should be --the material--.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 56-61 and 76-80 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyashita et al. (EP 0727832 A1).**

Re claims 56 and 58, Miyashita et al. ("Mayashita"), submitted by Applicant in IDS, discloses in FIG. 1 a method comprising: forming a material 13 over a substrate 12, wherein the material 13 comprises a first portion [FIG. 1(5)] and a second portion [FIG. 1(1)]; oxidizing only the first portion of the material 13 to form oxidized first portion 14 [FIG. 1(6)]; separately from

Art Unit: 2822

the oxidizing, converting at least a part of the oxidized first portion 14 to a perovskite-type crystalline structure [FIG. 1(7)]; and separately from the converting, oxidizing the second portion of the material 13 beneath the oxidized first portion [FIG. 1(2)].

Re claim 57, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed (e.g. substrate as capacitor electrode and converted oxidized material as capacitor dielectric layer) does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987).

Re claim 59, Miyashita discloses the material comprises an alloy of at least two metals, wherein it is inherent that at least two of the metals of the material exhibit a substantial difference in chemical affinity for oxygen [see page 3, lines 32-49].

Re claim 60, it appears that Miyashita discloses the oxidizing only the first portion [FIG. 1(6)] occurs in situ with the forming the material 13.

Re claim 61, since Miyashita discloses the converting comprises heating the oxidized first portion similar to the instant invention [see FIG. 1(7); "Step e", page 6, lines 5-22], it should be inherent that such heating process is carried out to a maximum temperature no more than about one-half of a melting point temperature of the material in order to form a perovskite-type crystalline structure.

Re claim 76, Miyashita et al. ("Mayashita") discloses in FIG. 1 a method comprising: forming a material 13 over a substrate 12; oxidizing the material 13 to form oxidized material 14 [FIG. 1(2)]; forming a passivation layer 13 over the oxidized material 14 [FIG. 1(3)]; separately

Art Unit: 2822

from the oxidizing, converting at least a portion of the oxidized material 14 to a perovskite-type crystalline structure 15 [FIG. 1(7)].

Re claims 77 and 78, it appears that Miyashita disclose forming the passivation layer occurs in situ with the forming the material and the oxidizing the material.

Re claim 79, Miyashita et al. discloses forming a first portion [FIG. 1(1)] and a second portion [FIG. 1(5)] of the material 13, wherein the first portion of the material 13 was oxidized [FIG. 1(2)], then the passivation layer 13 was oxidized [FIG. 1(4)], and thereafter the second portion of the material 13 was oxidized [FIG. 1(6)].

Re claim 80, it appears that Miyashita disclose the oxidizing the second portion of the material 13 [FIG. 1(6)] occurs in situ with the oxidizing the passivation layer 13 [FIG. 1(4)].

**Claims 62-67 are rejected under 35 U.S.C. 102(e) as being anticipated by Gan et al. (U.S. 6,524,651).**

Re claims 62, Gan et al. ("Gan") discloses in FIGs. 1a to 1c [see col. 4, ln. 7-45] a method comprising: depositing a material 130 (Sr, Ba, Mg and Ca and combination thereof) over a substrate 110 in a vacuum chamber at less than atmospheric pressure; oxidizing the material 130 in a vacuum chamber at less than atmospheric pressure; and separately from the oxidizing, converting (by heating) at least a portion of the oxidized material 140 to an inherent perovskite-type crystalline structure. Gan further discloses in FIG. 2 [see col. 4, ln. 47-62] a crystalline metal oxide structure 200 is formed by depositing on the oxidized material 140 at least one metal oxide layer 150 (SrO, SrTiO<sub>3</sub>, BaO, BaTiO<sub>3</sub>, Ba<sub>1-x</sub>, SrTiO<sub>3</sub> and combination thereof).

Art Unit: 2822

Re claim 63, Gan discloses the oxidizing comprises forming an inherent plasma while flowing oxygen into the vacuum chamber held at a pressure of  $1 \times 10^{-8}$  to  $1 \times 10^{-6}$  Torr at a temperature in the range of 25 to  $200^{\circ}\text{C}$  [see col. 4, ln. 30-35].

Re claim 64, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed (e.g. substrate as capacitor electrode and converted oxidized material as capacitor dielectric layer) does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987).

Re claims 65 and 66, as previously described, Gan discloses the material 130 comprises a combination (alloy) of Sr, Ba, Mg and Ca, wherein it is inherent that at least two of the metals of the material 130 (alloy) exhibit a substantial difference in chemical affinity for oxygen [see col. 4, ln. 19-23].

Re claim 67, since Gan discloses the converting comprises heating the oxidized material 140 similar to the instant invention [see col. 4, ln. 40-45], it should be inherent that such heating process is carried out to a maximum temperature no more than about one-half of a melting point temperature of the material in order to form a perovskite-type crystalline structure.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 68-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gan in view of Noguchi (U.S. 6,169,688).**

Gan discloses a method previously as described, which method is repeated herein.

Re claims 68, 69 and 74, Gan discloses oxidizing the material 130 by exposing at least an outer portion of the material 130 to essentially oxygen. However, Gan fails to specifically disclose if such oxygen exposure is one of oxygen implantation.

Noguchi suggests forming an element isolation film or an insulating film by implanting oxygen ions into a deposited magnetic film, wherein the magnetic film comprises a perovskite ferromagnetic material [see col. 39, ln. 1-21].

Since Gan and Noguchi are both from the same field of endeavor, the purpose disclosed by Noguchi would have been recognized in the pertinent prior art of Gan.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Gan by implanting oxygen ions into the material as suggested by Noguchi because of the desirability to increase the oxidation rate of the material during the oxidizing step.

Re claim 70, see discussion above regarding claim 64.



Re claims 71 and 72, see discussion above regarding claims 65 and 66.

Re claim 73, see discussion above regarding claim 63.

Re claim 75, see discussion above regarding claim 67.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 56-81 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-49 of U.S. Patent No. 6,730,575. Although the conflicting claims are not identical, they are not patentably distinct from each other because the present application merely broadens the claims of U.S. Patent No. 6,730,575.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The U.S. Patents to Ballantine et al. '592, Jung '608 and Seon et al. '753 disclose relevant teachings regarding perovskite structure dielectric films.

Art Unit: 2822

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Duong whose telephone number is (571) 272-1836. The examiner can normally be reached on Monday - Thursday (9:00 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KBD



AMIR ZARABIAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800